In the Claims

The following is a marked-up version of the claims with all changes shown by conventional comparison (underlining and strikethrough):

1. (Once Amended) A particulate trap system for an internal combustion engine, comprising:

at least one particulate trap module positioned to accept engine exhaust gas including a plurality of passages having porous walls for receiving the exhaust gas, wherein the porous walls filter particulate from the exhaust gas; and

reversing means for periodically reversing a portion of the filtered exhaust gas back through the porous walls in reverse flow at ~~sufficient~~ a substantially constant pressure ~~drop and~~ drop, resultant flow ~~velocity~~ velocity, and duration sufficient to dislodge and erode any build-up of soot and ash from the porous walls.

3. (Once Amended) The particulate trap system according to claim 1, wherein the at least one ~~monolithic~~ particulate trap module is at least one wall flow trap module.

6. (Once Amended) The particulate trap system according to claim 5, wherein the means for creating the pressure difference between the separation chamber and the exit chamber is a pressure relief valve ~~operatively mounted to~~ associated with the exit chamber for creating pressure build-up in the exit chamber, thereby forcing the filtered exhaust gas from the exit chamber back through the porous walls to dislodge and blow out the build-up of soot and ash on the inner surfaces of the porous walls.

7. (Once Amended) The particulate trap system according to claim 5, wherein the means for creating the pressure difference between the separation chamber and the exit chamber is a venturi ~~operatively mounted to~~ associated with the exit chamber and operatively connected to the separation chamber, wherein the venturi increases pressure in the exit chamber and reduces the pressure in the separation chamber,

thereby forcing the filtered exhaust gas from the exit chamber back through the porous walls to dislodge and blow out the build-up of soot and ash on the inner surfaces of the porous walls.

8. (Once Amended) The particulate trap system according to claim 5, wherein the means for creating the pressure difference between the separation chamber and the exit chamber is a pressure relief valve ~~operatively mounted to~~ associated with the exit chamber valve for creating pressure build-up in the exit chamber, and a venturi ~~operatively mounted to~~ associated with the exit chamber and operatively connected to the separation chamber, wherein the venturi increases pressure in the exit chamber and reduces the pressure in the separation chamber, thereby forcing the filtered exhaust gas from the exit chamber back through the porous walls to dislodge and blow out the build-up of soot and ash on the inner surfaces of the porous walls.

9. (Once Amended) The particulate trap system according to claim ~~8,~~ 5, ~~wherein the~~ further including at least one exit valve ~~precluding exhaust gas from entering the at least one particulate trap module from the entrance chamber allows~~ to selectively allow exhaust gas to ~~enter and~~ flow through the through flow passages to blow out the removed soot and ash and to erode any additional soot and ash.

27. (Once Amended) The particulate trap system according to claim 26, wherein the means for creating the pressure difference between the exit chamber and the second small flow entrance chamber is a pressure relief valve ~~operatively mounted to~~ associated with the exit chamber and for creating pressure build-up in the exit chamber, thereby forcing the filtered exhaust gas from the exit chamber back through the porous walls to dislodge and blow out the build-up of soot and ash on the inner surfaces of the porous walls back through the first small flow entrance chamber.

28. (Once Amended) The particulate trap system according to claim 26, wherein the means for creating the pressure difference between the exit chamber and the second small flow entrance chamber is a venturi ~~operatively mounted to~~ associated with the exit chamber and operatively connected to the second small flow entrance chamber, wherein the venturi increases pressure in the exit chamber and creates a suction in the second small flow entrance chamber, thereby forcing the filtered exhaust gas from the exit chamber back through the porous walls to dislodge and blow out the build-up of soot and ash on the inner surfaces of the porous walls back through the first small flow entrance chamber.

29. (Once Amended) The particulate trap system according to claim 26, wherein the means for creating the pressure difference between the exit chamber and the second small flow entrance chamber is a venturi ~~operatively mounted to~~ associated with the exit chamber and operatively connected to the secondary filter, wherein the venturi increases pressure in the exit chamber and creates a suction in the second small flow entrance chamber, thereby forcing the filtered exhaust gas from the exit chamber back through the porous walls to dislodge and blow out the build-up of soot and ash on the inner surfaces of the porous walls back through the first small flow entrance chamber.

30. (Once Amended) The particulate trap system according to claim 26, wherein the means for creating the pressure difference between the exit chamber and the second small flow entrance chamber is a pressure relief valve ~~operatively mounted to~~ associated with the exit chamber and for creating a pressure build-up in the second small flow entrance chamber, and a venturi ~~operatively mounted to~~ associated with the exit chamber and operatively connected to the second small flow entrance chamber, wherein the venturi increases pressure in the exit chamber and creates a suction in the second small flow entrance chamber, thereby forcing the filtered exhaust gas from the exit chamber back through the porous walls to dislodge and blow out the build-up of soot and ash on inner surfaces of the porous walls.

36. (Once Amended) The particulate trap system according to claim ~~34,~~ 35, wherein the means for creating the pressure difference between the exit chamber and the second small flow entrance chamber is a pressure relief valve ~~operatively mounted to~~ associated with the exit chamber and for creating pressure build-up in the exit chamber, thereby forcing the filtered exhaust gas from the exit chamber back through the porous walls to dislodge and blow out the build-up of soot and ash on the inner surfaces of the porous walls back through the first small flow entrance chamber.

37. (Once Amended) The particulate trap system according to claim ~~34,~~ 35, wherein the means for creating the pressure difference between the exit chamber and the second small flow entrance chamber is a venturi ~~operatively mounted to~~ associated with the exit chamber and operatively connected to the second small flow entrance chamber, wherein the venturi increases pressure in the exit chamber and creates a suction in the second small flow entrance chamber, thereby forcing the filtered exhaust gas from the exit chamber back through the porous walls to dislodge and blow out the build-up of soot and ash on the inner surfaces of the porous walls back through the first small flow entrance chamber.

38. (Once Amended) The particulate trap system according to claim ~~34,~~ 35, wherein the means for creating the pressure difference between the exit chamber and the second small flow entrance chamber is a pressure relief valve ~~operatively mounted to~~ associated with the exit chamber and for creating a pressure build-up in the second small flow entrance chamber, and a venturi ~~operatively mounted to~~ associated with the exit chamber and operatively connected to the second small flow entrance chamber, wherein the venturi increases pressure in the exit chamber and reduces pressure in the second small flow entrance chamber, thereby forcing the filtered exhaust gas from the exit chamber back through the porous walls to dislodge and blow out the build-up of soot and ash on inner surfaces of the porous walls.

61. (Once Amended) The method for reducing nitrogen oxide (NOx) in a cross flow particulate trap system used with an internal combustion engine according to claim ~~39,~~ 60, further including the steps of:

aligning a first, normal lean exhaust gas entrance chamber with a first end of the through flow passages;

aligning a second, rich exhaust entrance chamber with a second end of the through flow passages;

filtering exhaust gas through the porous walls of the through flow passages;

collecting the filtered exhaust gas in a third, exit chamber;

directing the exhaust gas from the third, exit chamber to the atmosphere;

admitting a majority of the normal lean exhaust gas from the first normal lean exhaust chamber into the first end of the through flow passages for a period of time, and blocking a minority of the normal lean exhaust gas from the first normal lean exhaust chamber into the first end of the through flow passages for a majority of the time;

admitting a minority of rich exhaust gas from the second rich exhaust chamber into the second end of the through flow passages for a period of time;

blocking a majority of rich exhaust gas from the second rich exhaust chamber into the second end of said through flow passages for a minority of the time;

controlling the at least one first valve to allow normal lean exhaust gas to enter the first end of the majority of passages having porous walls, while precluding the rich exhaust gas from entering second end of the majority of passages;

allowing rich exhaust gas into the second ends of the minority of passages, while precluding the normal lean exhaust gas from entering the first ends of the minority of the passages; and

sequentially changing the passages receiving the normal lean exhaust gas and the rich exhaust gas flow.

62. (Once Amended) The method for reducing nitrogen oxide (NOx) in a particulate trap system used with an internal combustion engine according to claim ~~39,~~ 60, further including the steps of:

treating the entering exhaust gas upstream of the particulate trap system;

cooling the exhaust gas stream when a maximum temperature is exceeded;

directing the majority of the exhaust gas flow to the particulate trap system to be admitted to the passages as normal lean exhaust;

directing and controlling the minority of the exhaust gas flow to an enrichment device;

injecting fuel into the minority exhaust flow stream;

igniting the injected fuel;

sensing the oxygen level downstream of the fuel injector;

monitoring and controlling at a stoichiometric to slightly rich mixture;

monitoring and controlling the temperature of the minority exhaust gas stream via the amount of fuel injected; and

directing the enriched minority exhaust flow to the passages as rich exhaust gas to the particulate trap system.

63. (Once Amended) The method for reducing nitrogen oxide (NOx) in a particulate trap system having the at least one wall flow particulate trap used with an internal combustion engine according to claim ~~39,~~ 60, further including the steps of:

forcing exhaust gas through the porous walls coated with precious metal catalysts and NOx adsorber material of the wall flow particulate trap module;

directing a majority flow of lean exhaust gas from the engine to the vicinity of the at least one wall flow particulate trap module;

directing a minority flow of exhaust gas to the vicinity of the at least one wall flow particulate trap module;

collecting the filtered and purified exhaust gas from the at least one wall flow particulate trap module and releasing it to the atmosphere;

connecting the entrance end of the at least one wall flow particulate trap module to the first channel to admit lean exhaust gas;

connecting the entrance end of the at least one wall flow particulate trap module to the first channel to admit rich exhaust gas; and

sequentially changing the passages receiving the lean exhaust gas and the rich exhaust gas flow.

64. (Once Amended) A method for filtering and regenerating particulate trap system for an internal combustion engine, comprising:

positioning an at least one particulate trap module to accept engine exhaust gas, wherein the at least one particulate trap module has a plurality of passages having porous walls for receiving the exhaust gas;

filtering the exhaust gas via the porous walls; and

periodically reversing a portion of the filtered exhaust gas back through the porous walls in reverse flow at ~~sufficient~~ a substantially constant pressure ~~drop and~~ drop, resultant flow ~~velocity~~ and duration sufficient to dislodge and erode any build-up of soot and ash from the porous walls.

67. (New) The particulate trap system according to claim 3, further including:

rotary valve means for preventing exhaust gas entry into a minority of the passages and for connecting an entrance of the minority of the passages to a separation chamber, wherein the rotary valve rotates to sequentially cause reverse flow through the porous walls of each of the minority of the passages while permitting normal flow to continue through the porous walls of a majority of the trap passages.

68. (New) The particulate trap system according to claim 39, wherein the means for passing a majority of lean exhaust gas through the porous of a majority of the plurality of passages includes rotary valve means for preventing exhaust gas entry into a minority of the passages and for connecting an entrance of the minority of the passages to a separation chamber, wherein the rotary valve rotates to sequentially cause reverse flow through the porous walls of each of the minority of the passages while permitting normal flow to continue through the porous walls of a majority of the trap passages.